

glandular bodies coexist; the former I regard as the true salivary organs, the latter as veneniferous glands for the destruction of prey. In *Nepa*, *Notonecta*, *Naucoris* and *Ranatra* these bodies are beautifully developed.

In pulmonary Arachnida the veneniferous glands are situated in the cephalothorax; their excretory ducts arise from the anterior part of the gland and traverse a minute canal in the mandibles, and open at the perforated extremity of these organs.

In Myriapoda, as in the preparation of *Geophilus longicornis* now before us, the veneniferous glands lie at the base of the mandibles among the striped or voluntary muscles that occupy this region. With an inch glass we see these organs most satisfactorily; they consist of two oblong compact bodies composed of bundles of diaphanous cells closely pressed together and inclosed in a distinct capsule reposing loosely at the base of the jaws and occupying the hollow part of these organs; from the anterior part of the gland rises a single excretory duct, which passes forwards in an arched direction and enters a canal in the horny part of the perforated jaw and opens near its apex, as in the Arachnida. By this mechanism, when *Geophilus* inserts its mandibles into the body of its victim, it at the same moment introduces a poison into the wound which destroys life, after the same principle as the parotid glands in some ophidian reptiles, as *Crotalus*, *Naja* and *Vipera*, are metamorphosed into veneniferous glands for the destruction of living prey. After this communication was made, Dr. Wright demonstrated the preparation to the members of the Club, and exhibited the singular structure with the aid of the microscope.

ENTOMOLOGICAL SOCIETY.

January 5th, 1846.—The Rev. F. W. Hope, F.R.S., President, in the Chair.

Mr. Edward Doubleday exhibited a large web, of a delicate silken texture and four or five yards long, sent from Mexico, and intended for the collection of the British Museum, known by the name of the *Tela de Maiz*, spun by the caterpillars of some small *Yponomeuta* or *Anacamptis* over heaps of maize laid up in store.

The President exhibited a portion of Mr. Fortnum's collection of insects formed at Adelaide in South Australia, with drawings of some of the more remarkable kinds, and announced that it was intended that a share of the duplicates should be placed in the collection of the Entomological Society.

Mr. Bedell (who was present as a visitor) exhibited a specimen of *Argyromiges Roborella* of Zeller, a species new to Great Britain.

A note was read by Mr. Brayley, accompanied by a species of *Anthomyia* (*A. pluvialis*, Linn.?), observed by a druggist to settle in great numbers on the filter when he was preparing tincture of cantharides, and at no other time. They did not however come out of the cantharides.

Extracts were read from letters addressed by Mr. Benson to Mr.

Westwood, containing notices of four new species of *Paussidæ*, recently captured in India (detailed descriptions of which have been subsequently published by Mr. Benson in the Calcutta Journal of Natural History).

A decade of new *Cetoniidæ*, chiefly sent from Cape Palmas by Mr. Savage, was read by the Rev. F. W. Hope.

Mr. E. Doubleday noticed, with reference to the minutes of the meeting of the Society on the 2nd of December 1845, as published in the Journal of the Proceedings of the Society, that it is his opinion that *Papilio Ædea* of Clerck is distinct from, although closely allied to, *Eterusia pulchella*, Hope; and that in respect to their antennæ, the genera separated by Mr. Hope constitute but one genus.

February 2nd.—The Rev. F. W. Hope, President, in the Chair.

Mr. Longley exhibited a specimen of one of the species of *Ophiusa* common on the western coast of Africa, captured on the 23rd of May 1845, in latitude $24^{\circ}15'$ north and $24^{\circ}45'$ west longitude, the nearest land being the island of St. Antonio, one of the Cape de Verd islands, distant 390 miles, and the main land being 470 miles distant, the wind being from the north-east.

Mr. Bedell exhibited a specimen of *Sphinx Convolvuli*, taken on board ship on the 9th of September 1845, about forty miles from the Land's End, in lat. $49^{\circ}24'$ north, and longitude about $5^{\circ}30'$ west. The ship left Cadiz on her return on the 11th of August, and the wind at the time of the capture was moderate from the north-east, the insect being observed to fly from the direction of the wind.

Mr. Westwood exhibited drawings and specimens of the curious cases made by the larva of *Clythra 4-maculata* found among the debris of ants' nests, from the collection of the Rev. F. W. Hope.

The Rev. F. W. Hope read a paper containing descriptions of the following new *Coleoptera*, collected by Mr. Fortnum at Adelaide in South Australia.

CORYNOPHYLLUS Fortnumi, Hope. Female: the male having been previously described and figured by Mr. Hope in the 'Transactions' of the Society.

SEMANOPTERUS, Hope. A new genus, in habit approaching *Cheiroplatys*, but distinguished by the elevated lines on the elytra and general sculpture. It possesses the grooved thorax of *Cheiroplatys*, and seems to approach *Philcurus*. The species are found under dead bark. Detailed descriptions and figures of the parts of the mouth were given.

Semanopterus Adelaidæ, Hope. *Niger, clypeo cornu brevi armato; thorace glabro in medio sulcato, sulco sparsim punctulato; elytris lineis elevatis politis, interstitiis punctulatis, punctis triplici serie impressis.* Long. corp. lin. $10\frac{1}{2}$.

Semanopterus subæqualis, Hope. *Niger, clypeo dente parvo armato; thoracis sulco haud fortiter impresso, punctato; elytris ferè æqualibus, lineis elevatis et punctis triplici serie ordinatis.* Long. corp. lin. 10.

Semanopterus depressus, Hope. *Niger*, *pectore pilis ferrugineis obsito*; *clypeo dente parvo armato*; *thorace sulcato, disco glabro sub lente tenuissimè punctulato*; *elytris lineis quibusdam elevatis, punctisque in triplici serie ordinatis*; *ano rubro*. Long. corp. lin. 10.

Onthophagus cereus, Hope. *Niger nitidus*; *antennis piceis*; *clypeo ferè trigono, posticè furcato, seu occipite lamina lata bicorni armato*; *thoracis dorso canaliculato, anticè retuso, in medio bituberculato*; *elytris sub forti lente lineato-punctatis*.

Onthophagus Adelaidæ, Hope. *Nigro-æneus, clypeo sub-bidentato, posticè furcato, seu cornubus duobus acutis, lateraliter divergentibus armato*; *thorace atro-æneo et granulatè rugoso*; *elytris depressis, sub lente striato-punctatis*.

Aphodius Adelaidæ, Hope. *Niger nitidus, clypeo submarginato*; *antennis atris*; *thorace glabro*; *elytris sub lente striato-punctatis*; *corpore infra nigro*; *femoribus tibiisque rubro-piceis*.

Aphodius cincticulus, Hope. *Affinis A. anachoretæ, Fab. Capite nigro submarginato, anticè flavescenti, tuberculo unico armato*; *thorace atro nitido, margine omni pallescente, scutello flavo*; *elytris striatis, fusco-flavis, margine flavescenti, sutura nigra*.

Aphodius sculptus, Hope. *Niger, antennis flavo-piceis*; *clypeo emarginato*; *thorace varioloso-punctato*; *clytris lineis elevatis glabris intermediis sculptilibus*; *corpore infra atro nitido, pedibus concoloribus*.—Port Philip.

Aphodius Tasmaniæ, Hope. *Fusco-brunneus, clypeo integro viâ reflexo*; *thorace nigricanti punctulato, margine omni pallescente*; *elytris striato-punctatis fusco-brunneis*; *corpore infra concolori, pedibus flavescensibus et ciliatis posticis longissimis*.—Van Diemen's Land.

Aphodius Howetti, Hope. *Præcedenti affinis, at minor. Fusco-piceus, clypeo integro viâ reflexo*; *thoracis disco nigricanti punctulato, margine omni rubro-piceo*; *elytris striato-punctatis atro-piceis*; *corpore infra flavescens, pedibus concoloribus*.—Port Philip.

These descriptions were accompanied by some verbal observations on the *Stercorarius* beetles of New Holland. Mr. Fortnum stated that the *Aphodiidæ* which he had observed possess the same habits as the *Melolonthidæ* in England in flying by night, and that they are found in human fæces, but are never met with more than five miles from the coast. Several species of *Onthophagi* are also found in human fæces.

Mr. E. Doubleday observed that he had noticed the small *Onthophagi* in North America upon bones; and in allusion to the attraction offered to insects by putrid fungi as well as decaying animal matter, he stated that in some parts of Peru the splendid butterflies of the genus *Morpho* are captured in great numbers upon rotten fungi, and are used to decorate the altars of the churches on saints' days and great festivals.

Mr. Spence stated, that from his own observations he was inclined to think that a much higher degree of instinct had been attributed to the sacred beetles than they really possessed. He had observed

them in Italy for a long time, and had never observed that they formed a hole previous to rolling their balls; and that instead of assisting one another, the whole scene was one of confusion, each individual endeavouring to appropriate whatever it could to its own purpose. Mr. E. Doubleday also stated that his own observations on the tumble-dung beetles of North America coincided with those of Mr. Spence, and that he had never seen any pitfall formed, but that the insects sunk their balls in the same way as the *Necrophagi*, by merely scratching the earth from beneath them.

March 24th.—The Rev. F. W. Hope, President, in the Chair.

Two boxes of Lepidopterous insects, sent from Ceylon by R. Templeton, Esq., were exhibited by Mr. Westwood.

Mr. J. F. Stephens exhibited a pupa-case of the emperor-moth of an irregular form, being nearly twice the ordinary size, and having the appearance of being double, from which however only one moth had been produced.

Captain Parry exhibited living specimens of a new species of *Ditotomus*, which he had received inclosed in quills transmitted by post from Lisbon.

Mr. S. Stevens communicated the following new and very effective method of relaxing insects:—"I procure about a dozen shoots with the leaves of the common laurel, the younger the better, put them into a coarse bag or cloth (shot bag I use), bruise them well with a wooden mallet till the bag becomes quite moist, then put it into a glazed jar or other large vessel, and stick the insects on the top of the bag, which must be tied over with a bladder, or secured in some way so that it is perfectly air-tight. Twenty-four hours is generally sufficient to relax most insects; but one great advantage is, that if they remain a week or ten days in the laurel, it does not in the least injure the specimens, so that they can be set out at any convenient opportunity. It also completely destroys the mites or mould, if the specimens happen to be infested; and it will be found to have many very great advantages over the old plan of damp sand or flannel. I was in hopes, from experiments that I made on two or three green species, that the colours would not fly; but I since regret to find on further trial, that *Hipparchus papilionarius*, *Hemithea vernaria* and *Cythisaria* are considerably changed by it. Mr. Dale informs me it answers equally well with the other orders, he having relaxed nearly the whole of his dragon-flies; and it is much used at Bristol for the *Hymenoptera*: it also effectually relaxes the skins of birds, and kills the vermin much better than camphor."

Mr. Marshall mentioned that a compound formed of one drachm of corrosive sublimate to eight ounces of the strongest alcohol was the most effectual remedy, when washed over an insect, against the attacks of mites, &c.

Mr. Hope read a paper containing descriptions of some new species of Australian *Buprestidæ*.

Mr. Westwood exhibited drawings of two very splendid *Chalcididæ*, forming a new genus, from Adelaide, collected by Mr. Fortnum.

Mr. Douglas read a series of observations suggested by, and in opposition to, the views concerning insect life published by Dr. Badham.

April 6th.—W. Spence, Esq., F.R.S., in the Chair.

A letter was read from Sir Gardner Wilkinson, thanking the Society for his election as a corresponding member.

Captain Parry exhibited a box of insects recently obtained from the Gold Coast, including many rare and interesting species, as well as specimens of *Goliathus Cacicus*; a locality worthy of notice, as Mr. Savage had stated his opinion that the Gold Coast was the region of *G. Drurii*, and the Grain Coast that of *G. Cacicus*.

Captain Parry also exhibited some heads of seeds similar to that of millet, obtained from the interior of South Africa, 300 or 400 miles from the Cape of Good Hope, nearly every seed of which was infested by a living specimen of a small *Calandra* allied to *C. oryzae*.

Mr. F. Bond exhibited a specimen of *Phryxus Hippolytes*, a remarkable parasitic crustacean allied to *Bopyrus*, recently described by Rathke in the 'Nova Acta,' and which had been found beneath the abdomen of a white shrimp (*Pandalus annulicornis*) on the coast of Sussex.

Mr. E. Doubleday exhibited a new species of the genus *Papilio*, *P. Dionysus*, Doubl., allied to *P. Hippocoon*, from the coast of tropical Western Africa, from the collection of Mr. Loddiges.

Mr. Ingpen exhibited a specimen of a species of *Polistes* from Mexico, from the body of which several filamentous fungi had vegetated; likewise the nest of the campanular wasp of Britain.

Mr. S. Stevens exhibited a specimen of a new British moth, *Graphiphora tristigma*, Ochsenheimer (but not of Stevens), allied to *Gr. triangulum*, which he had reared from a caterpillar found feeding by night on the blossoms of the willow in April 1844 at Weybridge, as Mr. Stevens believes. The insect hitherto known in this country under the name of *tristigma* is distinct, and is the *Noctua rhomboidea* of Esper and Ochsenheimer. He also exhibited specimens of *Orthosia leucographa*, *rubricosa*, *munda*, *miniosa*, *Calocampa exoleta*, and *Xylina rhizolita*, taken this spring from the blossoms of the willow in the neighbourhood of Dorking; also *Orthosia munda*, *populeti* and *Calocampa vetusta* from Wimbledon Park, having captured these insects (in consequence of the mildness of the season) a month or six weeks earlier than he took them last year.

Mr. Doubleday also exhibited, in behalf of Mr. Angus, a new genus of butterflies captured in New Zealand by that gentleman, allied to *Polyommatus*; also another new genus allied to *Agarista*, from the same island.

The following memoirs were read:—

"A Monograph on the genera *Pseudomorpha*, *Adelotopus*, &c." By J. O. Westwood, Esq., F.L.S.

"Descriptions of some species of *Oiketicus* from the island of Ceylon." By R. Templeton, Esq.

"Descriptions of three new exotic Insects." By A. White, Esq., *Ann. & Mag. N. Hist. Ser. 2. Vol. i.*

since published in the 'Annals of Natural History,' by whom also some observations were made on the geographical distribution of insects in North America as compared with New Zealand.

May 4th.—W. Spence, Esq., F.R.S., Vice-President, in the Chair.

The Secretary announced that the Address delivered by the President at the last anniversary meeting had been printed and was ready for delivery.

Mr. Moore, jun., exhibited some foreign beans attacked by a larva which had eaten through them, spinning its web for a passage.

Mr. S. Stevens exhibited a specimen of *Deilephila lineata*, taken at Hammersmith on the 16th of last April; also a specimen of *Cleora pictaria*, found on palings at Dartford Heath on the 12th of last April. It was also stated that specimens of *D. lineata* had been taken at Langport, Somersetshire, and by a nurseryman at Bristol in the past month of May, as well as a specimen of *D. Celerio* at Manchester.

He likewise exhibited the larvæ of *Polia tinctoria* and *Tryphæna fimbria*, both found on the birch at Birchwood at the beginning of May.

A memoir by W. W. Saunders, Esq., containing descriptions of some new species of Australian *Chrysomelidæ*, was read.

June 1st.—Thomas Marshall, Esq., Vice-President, in the Chair.

Mr. S. Stevens exhibited a second specimen of *Deilephila lineata*, taken at Hammersmith a short time previously; also several cases of a tough leathery texture, formed by a lepidopterous larva which eats through the base of the horn of the two-horned rhinoceros, from Southern Africa.

He also exhibited some twigs of oak from Darenth, Kent, completely defoliated by the small green *Tortrix viridana*, which was extraordinarily abundant this season.

Mr. Inghen exhibited a case of insects from Adelaide, including various rare and interesting *Coleoptera*, *Psychopsis mimica*, &c.

Mr. Harrington exhibited various splendid *Coleoptera* from the Himalayan range of India, including the male of *Cheirotonus MacLeai*, Hope, &c.

Mr. Moore, jun., exhibited a cocoon of *Eriogaster lanestrus* of a globular form, which on being opened was found to contain two male chrysalides; and Mr. Weir mentioned that he had observed the same circumstance several times in the same species, as had also Mr. Longley.

Mr. Westwood exhibited specimens of a minute species of the Dipterous genus *Phytomyza*, the larva of which mines within the leaves of the holly, causing large unsightly blotches upon them, and which had occurred in great profusion this spring. He had also reared a small parasitic Ichneumon from the leaves, which keeps the *Phytomyza* in check. He also exhibited specimens illustrating the history of the minute moth *Argyromiges Blancardella*, the larva of which mines the leaves of the evergreen oak, the chrysalis pushing itself half through a hole which it forms in the leaf in order to effect

its escape. He had also reared the parasitic *Ichneumon* attached to this species. He also exhibited specimens of the *Coccus manniparus* of Klug, brought from Arabia by Ehrenberg, as well as some manna brought from Mount Tabor by Lieut. Wellstead; and exhibited specimens of the *Womela*, an analogous secretion formed upon the under sides of the leaves of the various species of *Eucalyptus* in New South Wales by a minute species of *Psylla*, numbers of which were found secreted amongst the *Womela*. Mr. Westwood had been informed by Mr. Gould, that for several months last year this secretion formed a large portion of the food of the natives. The insects are attacked by a minute and very beautiful parasite of the genus *Encyrtus*. Mr. Harrington also stated that the genus *Eurymela* produces a kind of manna on the *Eucalypti*, and which falls to the ground in the shape of small white crystals.

A letter was read from W. Spence, Esq., inclosing an extract from a letter from his son R. Spence, Esq., giving an account of the discovery, by Professor Schiodte, of as many as twenty species of blind insects of different orders and genera, all new, in the caves of Styria; so that it would appear that there exists a subterranean fauna of blind animals. Ten of the insects were Coleopterous. It was mentioned that a Carabideous genus without eyes has lately been described by the German naturalists, and that various blind insects and spiders had been found in the mammoth-caves in Kentucky. (See Dr. Erichson's 'Bericht' for 1844.)

An extract from a letter addressed by Captain Boys to Mr. Westwood was read, giving an account of the habits of some Indian species of ants, white ants, and other insects:—

“On our way down towards Sukker, I observed what I consider an undescribed species of *Termes*, of an unusually large size, of which I made a note. The workers alone are nearly half an inch long. I never saw such monsters. The nest is peculiar. From the surface of the plain on which I observed these nests, which are conical in form, little hillocks of about six inches high were seen at various distances from each other, from five feet to twenty apart. These were composed of grains of earth worked up to about the size of millet seeds, and were quite loose, and might be taken up in handfuls. Inside each of these heaps, a raised structure, branching off in three or four short arms, was to be found, with an internal passage from the surface of the earth to each branch: but how the creatures contrived to cover the whole without appearing outside is left to conjecture. The apex of each cone was about three-quarters of an inch from the arborescent-looking structure inside. The latter was also composed of small pellets of earth, but half as fine as the superincumbent grains, and were moreover glued firmly to each other. I removed the earth from the outside of several nests, and blew away all the pellets, leaving only the stump sticking erect from the earth. At the top of the latter and at the end of each branch was an orifice, —the continuation of the internal canal. In about ten minutes hosts of the inhabitant ants came up with earth freshly manipulated, and began pouring their pellets out of each orifice: the latter of course

were carried by their jaws. I sat observing them for about an hour, when I marked the spot and returned to camp. In the afternoon, on my return to it, all the stumps were again covered over.

“The red ant you mention as having been described by Colonel Sykes is, I think, familiar to me. I allude to an ant of about four lines long which builds a beautiful nest in trees, mostly in a mango-tree. The nest is composed internally of a web much resembling that of the earth-spider, but much closer, and infinitely stronger in texture. The outer portion of the nest is a thatch of leaves, brought together by main force, and joined one to another by the forementioned web. I have seen nests almost as round as footballs, and quite as large. The mango-tree has its leaves long and oval, similar in shape to each segment of the casing in a tennis-ball, and the end of each branch bears a bunch of leaves (in a circle) to the number of eight or ten: however, these leaves are depressed and brought together in an admirable manner. The web bears writing on with facility, and the insect in the winged state is green. The bite of the worker is severe; and the scent of the formic acid, when the nest is interfered with, is so strong as to be almost insupportable.

“There is also a black ant which forms its nest in trees, in the Himalayas above Kimaon, but I have not studied their habits. The nest looks like an agglomeration of sawdust.

“Of *locusts* there are undoubtedly two species, exceedingly distinct, and which migrate in swarms, doing intense damage:—one, a pink underwinged kind with fuscous patches on the upper wings; the other with yellow underwings, and in other respects nearly similar, except that instead of being tawny it is of bright yellow, and which is far more common than the former. Again, there are three other species which are not so abundant, but still do much damage. These I have only observed in loose flocks, and have never taken them in the larva state. The whole country has suffered severely from the ravages committed by the two first species noticed, during the greater portion of last year and the latter end of 1843. The *pink underwing* species were so numerous in the terrai at the foot of the Himalayas near Bennourie, on the road to Almorah, that the branches of shrubs and trees on which they settled were completely hidden by them, and twigs a finger thick broken down by their weight alone. The ground one brickdust red. I observed these wretches in flights extending for miles, so thick as absolutely to obscure the sun, and cause some difficulty to my palanquin-bearers in getting through them, as at every step they rose in swarms, striking and flying against the men’s faces in every direction. This was in the middle of October in 1843. Several large flights of the yellow kind I had observed a month or six weeks previously at Almorah. Of the pink description the colour is more or less intense according to age, or quantity of rain they may have been exposed to. In fresh or lately matured insects the underwings are a very pale pink, and the outer ones not much darker. In old and tough specimens these latter organs become a dirty claret and water colour, inclining to Indian red. Of the *yellow kind* I obtained the larvæ in abundance at Nus-

seerabad in the latter end of July 1844, though I had never previously seen the insect in this state during nineteen years' sojourn in India. They were as numerous as their parents, swarming on every bush, and crawling all over the ground for miles among the hills near the above-named cantonment (these hills are a portion of the Aravalli range which rise near Delhi). The larva is very handsomely marked with orange-yellow and black; the face, if I may so term it, is bright orange-yellow, the portion behind and below the eyes a dark maroon. Legs (posterior ones) bright yellow banded with black; winglets light yellow, faintly striped with dusky connected spots. Antennæ black, with the two first joints yellow. But nothing but a correct delineation, or the insect itself, can give a just idea of its handsome markings.

"The two specimens now forwarded of a new species of *Colias*, together on one card, are, I am strongly inclined to think, different only in sex; and I consider the white as the male, having observed it hovering over the red. And besides this, I have been led to the conclusion by the fact, that for one red I took at least five white. The tree jungle about the place is called the Peeloo: its technical name is unknown to me; but the wood is held in high esteem by the natives for the purpose of making tooth-brushes.

"I have two species of *Celyphus* from Mhow in Malwa; one a bright bottle-green, the other darkish brown: the smaller species is about three lines long, the other a line longer. They resemble some of the *Fungicolæ*, but are rather longer in shape. The hard case (beneath which the wings are distinctly visible and extrude over the abdomen) is very like what obtains in many species of *Scutellera*."

A letter was read from Mr. Boreham, suggesting that the colours and forms of larvæ might possibly be preserved by inclosing them in glass tubes hermetically sealed from which the air had been extracted.

Mr. White read the descriptions of several new exotic *Hemiptera*, since published elsewhere, and alluded to the alteration produced by desiccation in metallic coloured insects, whence a species of *Callidea*, described under the name of *purpurea* by Mr. Westwood, was, when alive, of a metallic green. Spirits of wine, warm water, or æther were equally efficacious in restoring these colours after death. Mr. White also stated that Mr. Walker was engaged upon a work on the British *Aphides*, to be published by subscription.

MISCELLANEOUS.

MR. CUMING'S COLLECTION OF SHELLS.

WE have learnt with much gratification that the Trustees of the British Museum have resolved to recommend to Government the purchase of the well-known conchological collection of Hugh Cuming, Esq., F.L.S. We trust that no motives of mistaken economy may operate to frustrate this resolution. Its import-